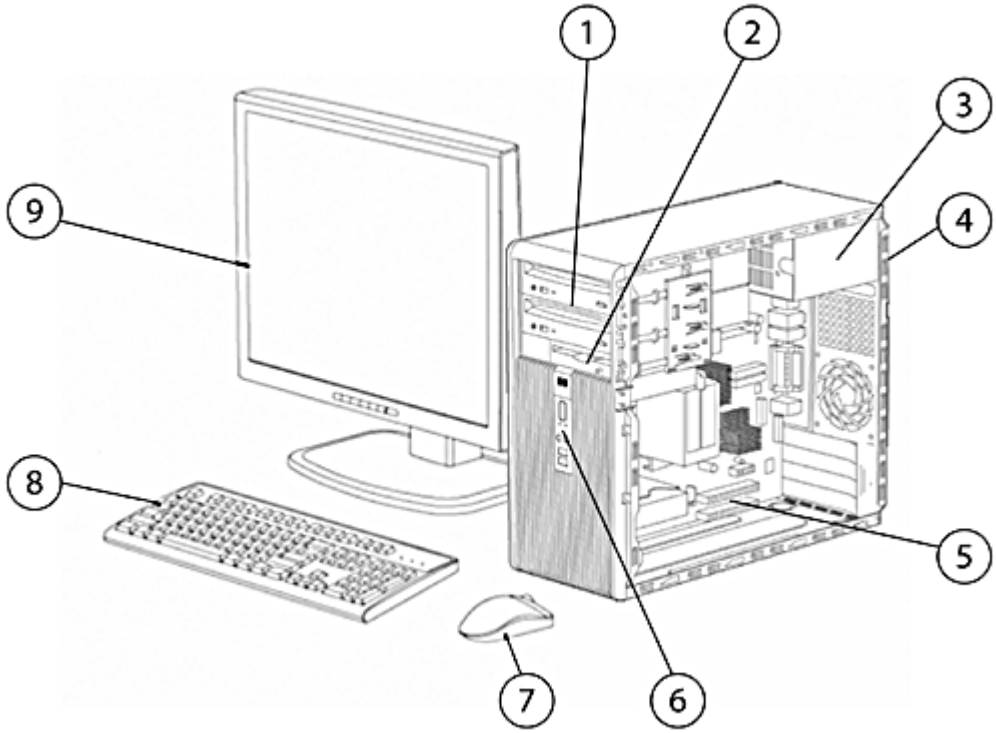
Overview

HP recommends
Windows Vista® Business

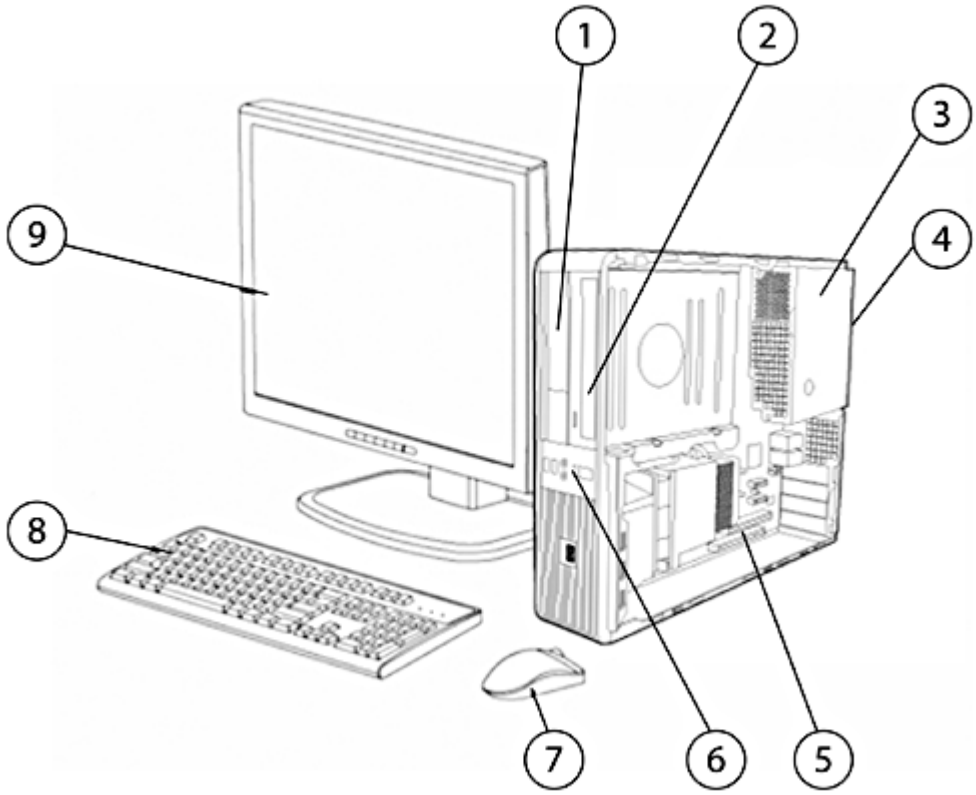
Microtower



1. (2) 5.25" external bays and (2) 3.5" internal bays
2. (1) 3.5" external bay for optional HP 16-in-1 Media Card Reader, diskette drive, or other 3.5" device
3. 300-watt power supply
4. Rear I/O: (6) USB 2.0, (1) standard serial port, (1) optional serial port, (1) optional parallel port, (2) PS/2, (1) RJ-45, (1) VGA, (1) audio in, (1) audio out
5. (1) full-height PCI slot, (2) full-height PCIe x1 slots, (1) full-height PCIe x16 (ADD2/SDVO) slot
6. Front I/O: (2) USB 2.0, headphone and microphone, Dual Colour Diagnostic LEDs
7. 2-Button Scroll Mouse (PS/2, Optical Scroll Mouse (PS/2 or USB), or USB Laser Mouse
8. HP Standard Keyboard (PS/2 or USB) or HP USB Smartcard Keyboard
9. Monitor (sold separately)

Overview

Small Form Factor



1. (1) 3.5" external bay for optional HP 16-in-1 Media Card Reader, diskette drive, or other 3.5" device; (1) 3.5" internal bay
2. (1) 5.25" external bay for optional optical drive, or other 5.25" device (bay tilts up for device removal and insertion)
3. 240-watt power supply
4. Rear I/O: (6) USB 2.0, (1) standard serial port, (1) optional serial port, (1) optional parallel port, (2) PS/2, (1) RJ-45, (1) VGA, audio in/out
5. (1) low profile PCI slot, (2) low profile PCIe x1 slots, (1) low profile PCIe x16 (SDVO/ADD2) slot
6. Front I/O: (2) USB 2.0, headphone and microphone, Dual Colour Diagnostic LEDs
7. 2-Button Scroll Mouse (PS/2), Optical Scroll Mouse (PS/2 or USB), or USB Laser Mouse
8. HP Standard Keyboard (PS/2 or USB) or HP USB Smartcard Keyboard
9. Monitor (sold separately)

Overview

At A Glance

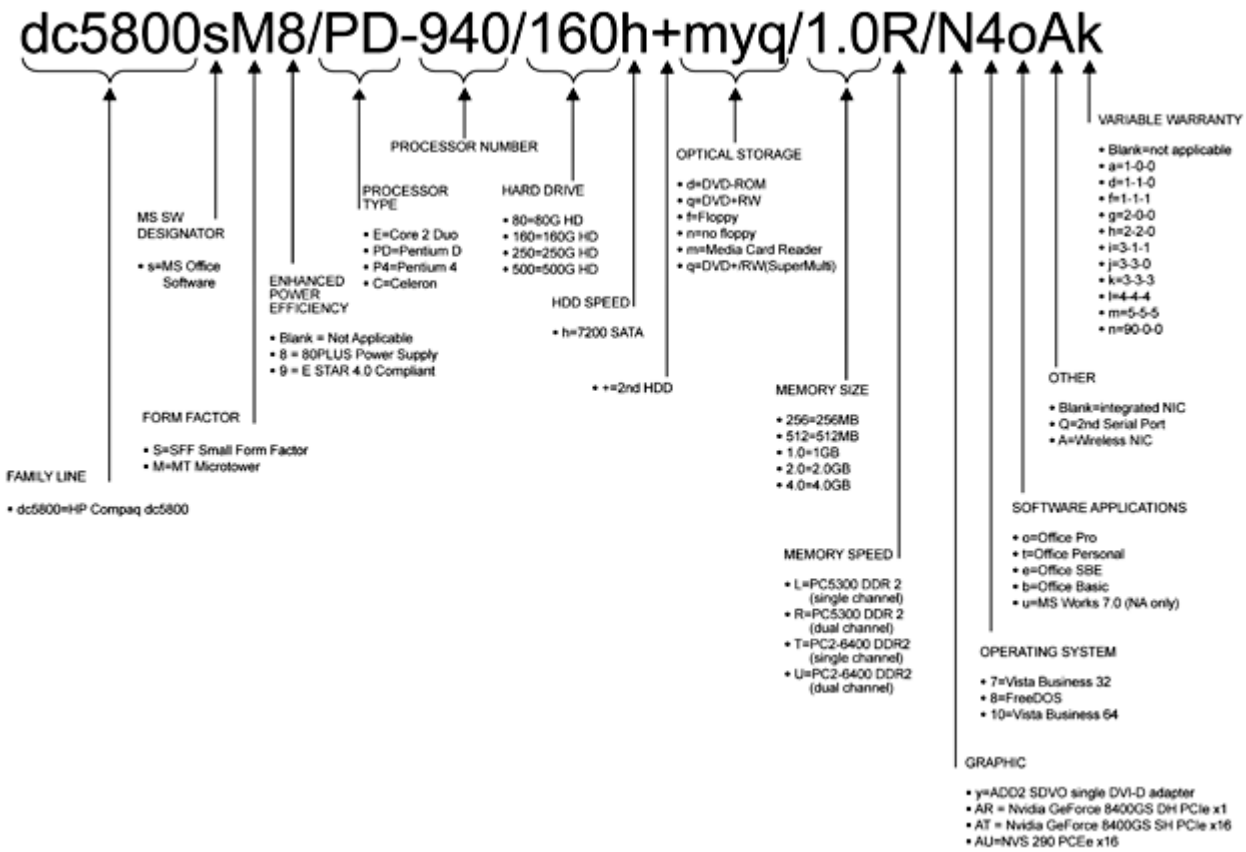
- The HP Compaq dc5800 offers a stable solution with mainstream features and flexibility that exceed basic business requirements
- Intel® Q33 Express chipset, Intel Core™ 2 Duo processors, Intel Core 2 Quad processors, and Intel Graphics Media Accelerator 3100 integrated graphics
- Embedded TPM1.2 compliant security module* (Vista Bit-Locker ready)
- Support for up to 500-GB SATA 3.0Gb/s Smart IV hard drives
- Value-added software on select models
  - HP Total Care Advisor
  - HP Backup and Recovery Manager
  - HP Software Agent
  - Altiris Deployment Solution Agent
  - McAfee Anti-Virus with 60 day Live Update Subscription
  - HP Insight Diagnostics software
  - Microsoft Office 2007
  - Verdiem Surveyor remote power management agent
  - PDF Complete
  - Computrace for Desktops (select countries)
- Value-added software available for free download from the Web (http://www.hp.com/go/easydeploy)
- HP Client Automation – Starter Edition
- HP Client Manager for Altiris
- Altiris Out-of-Band Management Solution
- HP SoftPaq Download Manager
- HP System Software Manager
- HP Client Catalog for Microsoft SMS
- Verdiem Surveyor remote power management agent
- Fully compatible software OS image across all models (Microtower, Small Form Factor)
- HP BIOS for security, manageability and software image stability
- Standard 3-years parts, 3-years labour, and 3-years on-site warranty services (terms and conditions vary by country; certain restrictions and exclusions apply)
- HP Insight Diagnostics software
- Selected configurations with global availability easily set up and ordered through HP.com Business to Business portals (http://h10019.www1.hp.com/business-site/index.html)
- Tailored HP Factory Express deployment and lifecycle services available (http://h71028.www7.hp.com/enterprise/cache/97688-0-0-225-121.aspx)

*TPM module disabled where use is restricted by law; for example, Russia.

Configurable Components - Select Models (localized by Regions)

Model Key and Example

NOTE: This diagram is an example that illustrates how to read the model number. It is not intended to give every available configuration choice specified in the body of this document and may include references to modules that are out of date and no longer available.



Operating System – One of the following	**Preinstalled**	Genuine Windows Vista Business 32*
		Genuine Windows Vista Business 64*
		Genuine Windows Vista Home Basic 32*
		Genuine Windows Vista Ultimate 32*
		Genuine Windows Vista Business 32 downgrade to Genuine Windows XP Professional 32+
		FreeDOS†
	Certified	Red Hat Enterprise Linux
		SUSE Linux Enterprise Desktop 10

* Certain Windows Vista product features require advanced or additional hardware. See http://www.microsoft.com/windowsvista/getready/hardwarereqs.mspx and http://www.microsoft.com/windowsvista/getready/capable.mspx for details. Windows Vista Upgrade Advisor can help you determine which features of Windows Vista will run on your computer. To download the tool, visit http://www.windowsvista.com/upgradeadvisor.

+ Windows Vista Business disk also included for future upgrade if desired. To qualify for this downgrade an end user must be a business (including governmental or educational institutions) and is expected to order annually at least 25 customer systems with the same custom image.

† The following features are not supported by Linux:

- HP 16-in-1 Media Card Reader with PCI Card
- Integrated 1.2 TPM Embedded Security Chip
- Intel PRO/1000 PT PCIe Gigabit NIC
- Broadcom NetXtreme Gigabit Ethernet PCIe NIC Card
- Wireless A+G PCI Card (full height bracket and low profile bracket)
- HP BT450 USB Bluetooth Wireless Printer and PC Adapter
- 2006 Agere PCI 56K International SoftModem (full height and low profile)
- HP ADD2 SDVO PCIe DVI-D adapter
- HP ADD2 SDVO PCIe VGA/TV-Out Adapter
- NVIDIA Quadro NVS 290 256MB DH PCIe x16 Graphics Card
- NVIDIA GeForce 8400 GS 256MB DH PCIe x1 Graphics Card
- NVIDIA GeForce 8400 GS 256MB SH PCIe x16 Graphics Card
- ATI Radeon HD 2400 XT 256MB DH PCIe x16 Graphics Card
- HP FireWire / IEEE 1394 PCI Card (full height and low profile)
- 2nd serial port adapter (including low profile)
- 1-GB Flash Module for Vista ReadyBoost
- HP USB Smartcard Keyboard
- HP USB Biometric Fingerprint Reader

Standard Features and Configurable Components

Value-added Software (on select models; not included with FreeDOS)	Altiris Deployment Solution Agent	HP Total Care Advisor
	HP Software Agent Altiris Out-of-Band Management Solution	Microsoft Office 2007 Basic Microsoft Office 2007 Personal
	HP Insight Diagnostics (available via HP Backup and Recovery Manager)	Microsoft Office 2007 Professional Microsoft Office 2007 Small Business
	Computer Setup Utility	Microsoft Works 8.5
	HP Backup and Recovery Manager	Microsoft Internet Explorer with AOL Toolbar PDF Complete
	McAfee Total Protection Anti-Virus with 60 day trial Subscription	Computrace for Desktops (select countries)
	Sonic/Roxio DigitalMedia Plus 7.2 (select models) or Easy Media Creator 9 (select models)	Verdiem Surveyor agent InterVideo WinDVD 5.0 (select models)
Value-added Software (available for free download from the Web http://www.hp.com/go/easydeploy)	HP Client Automation – Starter Edition	HP Client Catalog for Microsoft SMS
	HP Client Manager for Altiris	HP Systems Software Manager
	HP SoftPaq Download Manager	Verdiem Surveyor agent
Value-added Services and Features	HP Stable Platform Program	Factory Express Deployment and Lifecycle Services
	Business-to-Business Portals	TPM 1.2 Security chip*
	HP Global Series Services	
	* TPM module disabled where use is restricted by law; for example, Russia.	
Service and Support	On-site Warranty and Service[1] This three-year (3-3-3), limited warranty and service offering delivers three years of parts, labour and on-site repair. Response time is next business-day[2] and includes free telephone support[3] 24 x 7. Global coverage[2] ensures that any product purchased in one country and transferred to another non-restricted country will remain fully covered under the original warranty and service offering. Some countries/regions do not offer one year onsite and labour. For HP Care Pack services see http://www.hp.com/go/lookuptool. [1]Terms and conditions may vary by country. Certain restrictions and exclusions apply. [2]On-site service may be provided pursuant to a service contract between HP and an authorized HP third-party provider, and is not available in certain countries. Global service response times are based on commercially reasonable best effort and may vary by country. [3]Technical telephone support applies only to HP-configured, HP and HP-qualified, third-party hardware and software. Toll-free calling and 24 x 7 support may not be available in some countries.	

Standard Features and Configurable Components

	Microtower	Small Form Factor
Chassis Dimensions (H x W x D)	14.85 x 6.95 x 16.85 in	3.95 x 13.3 x 14.9 in
Optional Tower Stand Dimensions (H x W x D)	N/A	1.05 x 6.95 x 7.83 in (26.75 x 176.46 x 198.87 mm)
System weight*	19.75 lb (8.96 kg)	17.86 lb (8.10 kg)
System volume	1739 cu in	941.63 cu in
Shipping weight*	28.79 lb (13.06 kg)	26.70 lb (12.11 kg)
Maximum supported weight (desktop orientation)	77.1 lb (35 kg)	77.1 lb (35 kg)
Shipping box dimensions (H x W x D)	12.0 x 19.76 x 23.62 in	9.72 x 19.68 x 22.67 in

* Configured with 1 hard drive, 1 optical drive, no diskette drive, and no PCI card.

Power Supply	300W power supply – passive PFC	240W power supply – active PFC
80 PLUS Power Supply	300W 80 PLUS* power supply – active PFC	240W 80 PLUS* power supply – active PFC

* This alternate 80% efficient power supply is a requirement for ENERGY STAR 4.0 compliance in conjunction with a select range of processors and modules.

Ports

USB 2.0	8 (2 front, 6 rear)
Serial	1 standard with 2nd optional
Parallel	1 optional
PS/2	1 keyboard, 1 mouse
Video	analog for integrated graphics
DVI output	available via ADD2 card in PCIe x16 connector
Support for Multi-Monitor	available via ADD2 card in PCIe x16 connector or via PCIe graphics cards
Audio	Integrated High Definition audio with internal speaker Front – mic and headphone Rear – input (supports microphone or line input), line out
NIC (RJ-45)	Integrated Intel 82566DM Gigabit Network Connection Ethernet

		MT	SFF
Chipset	Intel Q33 Express chipset	X	X

Standard Features and Configurable Components

Processor and Speed* One of the following	**Intel Celeron Processors:**		
	Intel Celeron 420 Processor (1.6-GHz, 512K L2 cache, 800-MHz FSB)	X	X
	Intel Celeron 430 Processor (1.8-GHz, 512K L2 cache, 800-MHz FSB)	X	X
	Intel Celeron Dual-Core Processors		
	Intel Celeron E1200 Processor (1.6-GHz, 512K L2 cache, 800-MHz FSB)	X	X
	Intel Pentium Dual-Core Processors:		
	Intel Pentium E2160 Processor (1.8-GHz, 1-MB L2 cache, 800-MHz FSB)	X	X
	Intel Pentium E2180 Processor (2.0-GHz, 1-MB L2 cache, 800-MHz FSB)	X	X
	Intel Pentium E2200 Processor (2.2-GHz, 1-MB L2 cache, 800-MHz FSB)	X	X
	Intel Core 2 Duo Processors:		
	Intel Core 2 Duo E4500 Processor (2.20-GHz, 2 MB L2 cache, 800-MHz FSB)	X	X
	Intel Core 2 Duo E4600 Processor (2.40-GHz, 2 MB L2 cache, 800-MHz FSB)	X	X
	Intel Core 2 Duo E4700 Processor (2.60-GHz, 2MB L2 cache, 800-MHz FSB)	X	X
	Intel Core 2 Duo E6550 Processor (2.33-GHz, 4 MB L2 cache, 1333-MHz FSB)	X	X
	Intel Core 2 Duo E6750 Processor (2.66-GHz, 4 MB L2 cache, 1333-MHz FSB)	X	X
	Intel Core 2 Duo E8200 Processor (2.66-GHz, 6 MB L2 cache, 1333-MHz FSB)	X	X
	Intel Core 2 Duo E8300 Processor (2.83-GHz, 6 MB L2 cache, 1333-MHz FSB)	X	X
	Intel Core 2 Duo E8400 Processor (3.0-GHz, 6 MB L2 cache, 1333-MHz FSB)	X	X
	Intel Core 2 Quad Processors:		
	Intel Core 2 Quad Q6700 Processor (2.66-GHz, 8 MB L2 cache, 1066-MHz FSB)	X	X
	Intel Core 2 Quad Q9300 Processor (2.50-GHz, 6 MB L2 cache, 1333-MHz FSB)	X	X

* Intel processor numbers are not a measure of performance. Processor numbers differentiate features within each processor family, not across different processor families.

Memory

DDR2 SYNCH DRAM NON-ECC MEMORY

Memory upgrades are accomplished by adding single or multiple DIMMs of the same or varied sizes. This chart does not represent all possible memory configurations. The Intel Q33 Express chipset supports non-ECC DDR2 PC2-6400 (800-MHz) memory.

CAUTION: You must shut down the computer and disconnect the power cord before adding or removing memory modules. Regardless of the power-on state, voltage is always supplied to the memory modules as long as the computer is plugged in to an active AC outlet. Adding or removing memory modules while voltage is present may cause irreparable damage to the memory modules or system board.

HP recommends dual-channel symmetric configurations for maximum performance.

For best performance, add the same amount of total memory to each channel and do not mix speeds. For dual-channel symmetric performance, the total amount of memory in each channel must be equal. If speeds are mixed, speed will default to the slowest DIMM.

Standard Features and Configurable Components

Microtower and Small Form Factor

Maximum Memory* Supports up to 8-GB of DDR2 SYNCH DRAM. *Slot 1 is black and must always be populated. Not all memory configurations possible are represented below.*
NOTE: For systems configured with more than 3 GB of memory and a 32-bit operating system, all memory may not be available due to system resource requirements. Addressing memory above 4 GB requires a 64-bit operating system.

DIMM Size	Slot			
	Channel A		Channel B	
	1 (black)	2 (white)	3 (black)	4 (white)
512-MB	512-MB			
1-GB	1-GB			
1-GB (dual-channel symmetric)	512-MB		512-MB	
2-GB (dual-channel symmetric)	1-GB		1-GB	
2-GB (dual-channel symmetric)	512-MB	512-MB	512-MB	512-MB
3-GB (dual-channel symmetric)	1-GB	512-MB	1-GB	512-MB
4-GB maximum (dual-channel symmetric)	1-GB	1-GB	1-GB	1-GB
8-GB maximum (dual-channel symmetric)	2-GB	2-GB	2-GB	2-GB

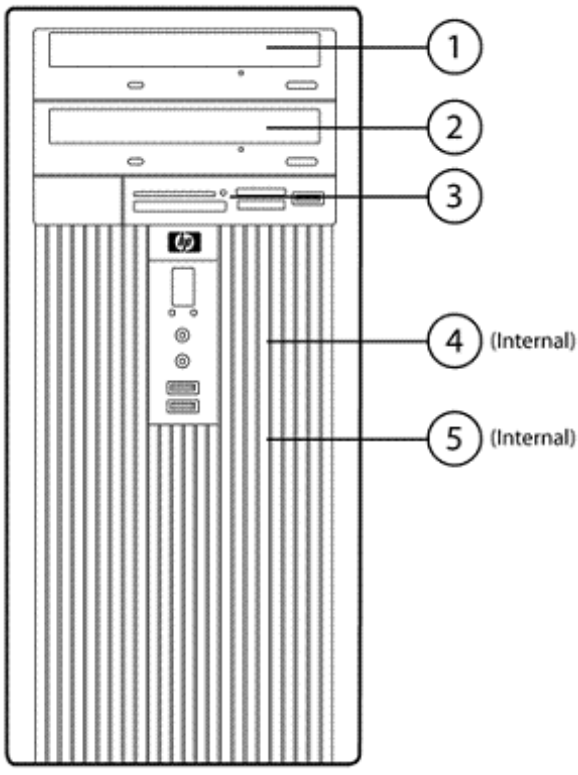
* The Intel Q33 Express chipset includes a built-in Management Engine (ME), which allocates memory for manageability functions. Management Engine memory is shared with system memory. If the PC contains a single DIMM, 16 MB of memory is pre-allocated for it at system startup. If the PC contains two DIMMs, 32 MB of memory is pre-allocated. This memory is not made available to the operating system, just as pre-allocated video memory is not available.

		MT	SFF
Memory Configurations One of the following	512-MB DDR2 Synch Dram PC2-6400 (800-MHz) Non ECC (1 x 512)	X	X
	1-GB DDR2 Synch Dram PC2-6400 (800-MHz) Non ECC (1 x 1GB)	X	X
	1-GB DDR2 Synch Dram PC2-6400 (800-MHz) Non ECC (2 x 512)	X	X
	2-GB DDR2 Synch Dram PC2-6400 (800-MHz) Non ECC (1 x 2GB)	X	X
	2-GB DDR2 Synch Dram PC2-6400 (800-MHz) Non ECC (2 x 1GB)	X	X
	2-GB DDR2 Synch Dram PC2-6400 (800-MHz) Non ECC (4 x 512)	X	X
	3-GB DDR2 Synch Dram PC2-6400 (800-MHz) Non ECC (3 x 1GB)	X	X
	4-GB DDR2 Synch Dram PC2-6400 (800-MHz) Non ECC (4 x 1GB)	X	X
	4-GB DDR2 Synch Dram PC2-6400 (800-MHz) Non ECC (2 x 2GB)	X	X
	8-GB DDR2 Synch Dram PC2-6400 (800-MHz) Non ECC (4 x 2GB)	X	X

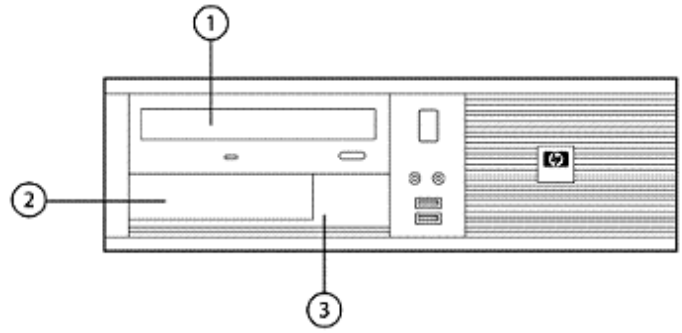
Standard Features and Configurable Components

Expandability	Microtower	Small Form Factor
PCI slots	1 full-height	1 low-profile
Max power per slot	35W	35W
PCIe x1 slot	2	2
Max power per slot	10W	10W
PCIe x16 slot (also functions as SDVO/ADD2 slot)	1 full-height	1 low-profile
Max power per slot	60W	25W
External Bays		
3.5″	1	1
5.25″	2	1
IDE		
Internal 3.5″ HDD Bays	2	1
Hard Drive Controller (SATA) Supported	SATA	SATA
Hard Drive Interfaces Supported	SATA 3.0Gb/s	SATA 3.0Gb/s

Microtower



Small Form Factor



Standard Features and Configurable Components

Storage – Drive Support						
	Microtower			Small Form Factor		
	Media Card Reader or Diskette Drive (optional)	5.25" Serial ATA Devices	3.5" Serial ATA Devices	Media Card Reader or Diskette Drive (optional)	5.25" Serial ATA Devices	3.5" Serial ATA Devices
Quantity Supported	1	2	2	1	1	2
Position Supported	③	①,②	③,④,⑤	②	①	②,③
Controller	USB/Diskette	SATA	SATA	USB/Diskette	SATA	SATA

		MT	SFF
Hard Drive One or two of the following	80-GB SATA 3.0-Gb/s Hard Drive (8MB Cache, 7200 RPM, NCQ, Smart IV)	X	X
	160-GB SATA 3.0-Gb/s Hard Drive (8MB Cache, 7200 RPM, NCQ, Smart IV)	X	X
	250-GB SATA 3.0-Gb/s Hard Drive (8MB Cache, 7200 RPM, NCQ, Smart IV)	X	X
	500-GB SATA 3.0-Gb/s Hard Drive (16MB Cache, 7200 RPM, NCQ, Smart IV)	X	X
	80-GB SATA 3.0-Gb/s Hard Drive (16MB Cache,10,000 RPM, NCQ, Smart III)	X	X
	160-GB SATA 3.0-Gb/s Hard Drive (16MB Cache, 10,000 RPM, NCQ, Smart III)	X	X
	3.5" Removable 80-GB SATA 3.0 Gb/s Hard Drive (8MB Cache, 7200 RPM, NCQ, Smart IV)	X	X
	3.5" Removable 160-GB SATA 3.0 Gb/s Hard Drive (8MB Cache, 7200 RPM, NCQ, Smart IV)	X	X
	3.5" Removable 250-GB SATA 3.0 Gb/s Hard Drive (8MB Cache, 7200 RPM, NCQ, Smart IV)	X	X
	2nd hard drive, 80-GB SATA 3.0-Gb/s Hard Drive (8MB Cache, 7200 RPM, NCQ, Smart IV)	X	X
	2nd hard drive, 250-GB SATA 3.0-Gb/s Hard Drive (8MB Cache, 7200 RPM, NCQ, Smart IV)	X	X
	2nd hard drive, 500-GB SATA 3.0-Gb/s Hard Drive (16MB Cache, 7200 RPM, NCQ, Smart IV)	X	X
	NOTE : NCQ functionality requires a user set-up BIOS setting.		

Standard Features and Configurable Components

Removable Storage – One or more of the following depending on form factor (see Storage – Drive Support section above)	**Diskette Drives**		
	1.44-MB Diskette Drive	X	X
	Media Reader		
	HP 16-in-1 Media Reader (USB connection on the system board)	X	X
	Optical Drives		
	SATA DVD-ROM Drive[1]	X	X
	SATA CD-RW/DVD-ROM Combo Drive[1,2]	X	X
	SATA SuperMulti LightScribe DVD Writer Drive[1,2,3]	X	X
	[1] For playing DVDs, InterVideo WinDVD 5 [2] For writing CDs, choice of Sonic/Roxio DigitalMedia Plus 7.2 (Windows XP only) or Easy Media Creator 9 [3] For writing CDs and DVDs, video editing and authoring DVDs, choice of Sonic/Roxio DigitalMedia Plus 7.2 (Windows XP only) or Easy Media Creator 9		
Media Card Reader – One of the following	HP 16-in-1 3.5" Media Card Reader	X	X
Security	Integrated 1.2 TPM Embedded Security Chip*	X	X
	HP Desktop Security lock kit (lock and cable)	X	X
	Security cable with Kensington lock	X	X
	Optional HP ProtectTools security software suite	X	X
	* TPM module disabled where use is restricted by law; for example, Russia.		
NIC	Intel 82566DM Gigabit Network Connection (integrated on system board)	X	X
	Broadcom NetXtreme Gigabit Ethernet PCIe NIC Card	X	X
	Intel PRO/1000 PT PCIe Gigabit NIC	X	X
Wireless	Wireless A+G PCI Card (full height bracket)	X	
	Wireless A+G PCI Card (low profile bracket)		X
Modem	2006 Agere PCI 56K International SoftModem (full height)	X	
	2006 Agere PCI 56K International SoftModem (low profile)		X

Standard Features and Configurable Components

Graphics	Integrated Intel Graphics Media Accelerator 3100	X	X
	HP ADD2 SDVO PCIe DVI-D adapter	X	X
	HP ADD2 SDVO PCIe VGA/TV-Out Adapter	X	X
	NVIDIA Quadro NVS 290 256MB DH PCIe x16 Graphics Card	X	X
	NVIDIA GeForce 8400 GS 256MB DH PCIe x1 Graphics Card†*	X	X
	NVIDIA GeForce 8400 GS 256MB SH PCIe x16 Graphics Card†	X	X
	ATI Radeon HD 2400 XT 256MB DH PCIe x16 Graphics Card	X	X
	† 1GB of system memory required. Graphics cards use part of the total system memory to enhance graphics performance. * Two NVIDIA GeForce 8400 GS 256MB DH PCIe x1 graphics cards can be installed to provide support for four monitors.		
Audio	Integrated High Definition audio with ADI1884 codec (all ports are stereo)	X	X
	Microphone and Headphone front ports	X	X
	Line-out and Line-In rear ports*	X	X
	Multistreaming capable*	X	X
	Internal Speaker	X	X
	* Rear audio input port is re-taskable as Line-in or Microphone-in. External speakers must be powered externally. Multistreaming can be enabled in the ADI control panel to allow independent audio streams to be sent to/from the front and rear jacks. This allows for different audio applications to use separate audio ports on the system. For example, the front jacks could be used with a headset for a communications application while the rear jacks are being used with external speakers and a multimedia application.		
Input Devices	**Keyboard** – One of the following		
	HP PS/2 Standard Keyboard	X	X
	HP USB Standard Keyboard	X	X
	Mouse – One of the following		
	USB 2-Button Laser Mouse	X	X
	PS/2 2-Button Optical Scroll Mouse	X	X
	USB 2-Button Optical Scroll Mouse	X	X
Miscellaneous	HP FireWire / IEEE 1394 PCI Card (full height)	X	
	HP FireWire / IEEE 1394 PCI Card (low profile)		X
	2nd serial port adapter	X	
	2nd serial port adapter (low profile)		X
	Tower stand		X
	1-GB Flash Module for Vista ReadyBoost	X	X

After-Market Options (availability may vary by region)

		MT	SFF	Part Number
Office 2007 Media-less License Kits (MLK's)				
	MS Office Basic Edition 2007 – Media-less License Kit	X	X	RZ361A#ABA
	MS Office Small Business Edition 2007 – Media-less License Kit	X	X	RZ365A#ABA
	MS Office Professional Edition 2007 – Media-less License Kit	X	X	RZ363A#ABA
Communications	Wireless LAN			
	HP Wireless A+G PCI Card (North America only)	X	X	EA118AA
	HP Wireless A+G PCI Card (WW except North America)	X	X	PZ928AA
	HP BT450 USB Bluetooth Wireless Printer and PC Adapter	X	X	IPQ639A
	NICs			
	Broadcom NetXtreme Gigabit Ethernet PCIe NIC Card	X	X	EA833AA
	Intel PRO/1000 PT PCIe Gigabit NIC Card	X	X	EH352AA
	Modem			
	Agere 2006 PCI 56K International Modem	X	X	EK694AA
	Connectivity			
	Bundle Connectivity Starter Kit – Surge Protector/LAN cable/Printer cable	X	X	RT174AA
Graphics	Single head solutions			
	HP ADD2 SDVO DVI-D Adapter	X	X	DY674A
	NVIDIA GeForce 8400 GS 256MB SH PCIe x16 Graphics Card*	X	X	GJ119AA
	Multi head solutions			
	HP DVI to DVI Cable	X	X	DL139A
	NVIDIA Quadro NVS 290 256MB DH PCIe x1 Graphics Card	X	X	KN586AA
	NVIDIA Quadro NVS 290 256MB DH PCIe x16 Graphics Card	X	X	KG748AA
	NVIDIA GeForce 8400 GS 256MB DH PCIe x1 Graphics Card*	X	X	GJ120AA
	ATI HD 2400 XT 256MB Dual Head PCIe x16, low profile Graphics Card	X	X	KD060AA (launching 4/28)
	* 1GB of system memory required. Graphics cards use part of the total system memory to enhance graphics performance.			
Hard Drives	Serial ATA Hard Drives			
	HP 80-GB SATA (NCQ/Smart IV) 3.0-Gb/s Hard Drive	X	X	PY276AA
	HP 160-GB SATA (NCQ/Smart IV) 3.0-Gb/s Hard Drive	X	X	PY277AA
	HP 250-GB SATA (NCQ/Smart IV) 3.0-Gb/s Hard Drive	X	X	PY278AA
	HP 500-GB SATA (NCQ/Smart IV) 3.0-Gb/s Hard Drive	X	X	PV943A
	HP Removable SATA Hard Drive Enclosure (Frame & Carrier)	X	X	RY102AA
	HP Removable SATA Hard Drive Enclosure (Carrier Only)	X	X	RY103AA

After-Market Options (availability may vary by region)

Input/Output Devices	HP PS/2 Standard Keyboard	X	X	DT527A
	HP USB Standard Keyboard	X	X	DT528A
	HP USB Smartcard Keyboard	X	X	ED707AA
	HP USB Laser Mouse	X	X	GW405AA
	HP PS/2 2-Button Optical Scroll Mouse	X	X	EY703AA
	HP USB 2-Button Optical Scroll Mouse	X	X	DC172B
Memory (DIMMs)	PC2-6400 (DDR2, 800 MHz) DIMMs Non-ECC			
	HP 2-GB PC2-6400 (DDR2 800 MHz) DIMM	X	X	AH060AA
	HP 1-GB PC2-6400 (DDR2 800 MHz) DIMM	X	X	AH058AA
	HP 512-MB PC2-6400 (DDR2 800 MHz) DIMM	X	X	AH056AA
	HP 2-GB PC2-5300 (DDR2 667 MHz) DIMM	X	X	PX977AA
	HP 1-GB PC2-5300 (DDR2 667 MHz) DIMM	X	X	PX976AA
	HP 512-MB PC2-5300 (DDR2 667 MHz) DIMM	X	X	PX975AA
	1GB Flash Module for Windows Ready Boost	X	X	KG274AA
Monitors	CRTs			3PO Offering
	Business LCD Monitors			
	HP L1506 15-inch LCD Monitor			PX848AA#ABA
	HP L1710 17-inch LCD Monitor			GS917AA#ABA
	HP L1750 17-inch LCD Monitor			GF904AA#ABA
	HP L1745 17-inch LCD Monitor			GE178AA#ABA
	HP L1910 19-inch LCD Monitor			GS918AA#ABA
	HP L1950 19-inch LCD Monitor			GG458AA#ABA
	HP LP1965 19-inch LCD Monitor			RA373AA#ABA
	HP LP2065 20-inch LCD Monitor			EF227A4#ABA
	Business Widescreen LCD Monitors			GX007AA#ABA
	HP L1908w 19-inch Widescreen LCD Monitor			GP536AA#ABA
	HP L2045w 20-inch Widescreen LCD Monitor			RD125AA#ABA
	HP L2208w 22-inch Widescreen LCD Monitor			GX007AA#ABA
	HP L2245w 22-inch Widescreen LCD Monitor			GX008AA#ABA
	HP LP2465 24-inch Widescreen LCD Monitor			EF224A4#ABA
	HP LP3065 30-inch Widescreen LCD Monitor			EZ320A4#ABA
	Business Widescreen LCD Monitor with Integrated Speakers			
	HP L1908wm 19-inch Widescreen LCD Monitor with Built in Integrated Speakers			KA214AA#ABA
	Business GSA Monitors			3PO Offering
	Business Touchscreen LCD Monitor			
	HP L5006tm 15-inch Touch Screen LCD Monitor			RB146AA#ABA
	Business LCD Monitor with Integrated Work Stand			
	HP L1908wi 19-inch Widescreen LCD Monitor plus Integrated Work Stand			GP537AA#ABA
	HP L1910i 19-inch LCD Monitor plus Integrated Work Stand			GS581AA#ABA

After-Market Options (availability may vary by region)

	Options			
	HP Flat Panel Speaker Bar			EE418AA
	HP Quick Release Kit			EM870AA
	HP Integrated Work Stand (stand alone)			GN783AA
Multimedia	HP USB Powered Speakers	X	X	RD628AA
	Thin USB Powered Speakers	X	X	KK912AA (launching 4/14/08)
Optical Drives	**DVD-ROM Drive**			
	HP SATA DVD-ROM Drive	X	X	AH047AA
	DVD Writer			
	HP SATA SuperMulti LightScribe DVD Writer Drive	X	X	GF343AA
	CD-RW/DVD-ROM Combo Drive			
	48X SATA CD-RW/DVD-ROM Combo Drive	X	X	AH046AA
Removable Storage	**Diskette and Digital Drives**			
	HP 1.44-MB External USB Diskette Drive	X	X	DC141B
	HP 1.44-MB Internal Diskette Drive	X	X	AH053AA
	Multimedia			
	HP 16-in-1 Media Card Reader with PCI Card	X	X	EM718AA
Security	Kensington lock	X	X	PC766A
	HP ProtectTools security software suite	X	X	KN740AA
	HP ProtectTools Client Security Software including HP ProtectTools Security Manager BIOS Configuration for HP ProtectTools Credential Manager for HP ProtectTools Device Access Manager for HP ProtectTools Drive Encryption for HP ProtectTools Embedded Security for HP ProtectTools Java Card Security for HP ProtectTools	X	X	KN740AA
	HP 2007 Wall Mount/Security Sleeve		X	GF344AA
	HP USB Biometric Fingerprint Reader	X	X	EM717AA
	HP USB Smartcard Keyboard	X	X	ED707AA

After-Market Options (availability may vary by region)

Manageability	HP Client Configuration Manager, Premium Edition	X	X	T3488AA (use T3489AA for 1000 licenses)
	HP ProtectTools Client Security Software including HP ProtectTools Security Manager BIOS Configuration for HP ProtectTools Credential Manager for HP ProtectTools Device Access Manager for HP ProtectTools Drive Encryption for HP ProtectTools Embedded Security for HP ProtectTools Java Card Security for HP ProtectTools	X	X	KN740AA
	Altiris Client Management Suite Level 1 Includes: Altiris Deployment Solution Altiris Inventory Solution Altiris Application Metering Solution Altiris Carbon Copy Solution Altiris Software Delivery Solution Altiris Application Management Solution Altiris Patch Management Solution	X	X	DR605A (use DR606A for 1000+ licenses)
Brackets/Stands	HP 2007 SFF Tower Stand		X	GJ118AA
	HP Tower Stand		X	RG048AA
Miscellaneous Accessories	HP 2nd Serial Port Adapter	X	X	PA716A
	HP Parallel Port Adapter	X	X	KD061AA
	Belken USB to Serial Adapter	X	X	EM449AA
	HP FireWire / IEEE 1394 PCI Card	X	X	PA997A
	DVI to DVI Cable	X	X	DC198A
	5.25" Blank Bezel Kit (Carbonite 50/Bulk Pack)	X	X	DC177B
	Local Area Network (LAN) cable, Ethernet cable	X	X	AH122AA
	Firewire (1394) Cable	X	X	AH123AA
	7-outlet Surge Protector	X	X	AG290AA

Unit Environment and Operating Conditions	Microtower	Small Form Factor
General Unit Operating Guidelines • Keep the computer away from excessive moisture, direct moisture and the extremes of heat and cold, to ensure that unit is operated within the specified operating range. • Leave a 10.2 cm (4 in) clearance on all vented sides of the computer to permit the required airflow. • Never restrict airflow into the computer by blocking any vents or air intakes. • Do not stack computers on top of each other or place computers so near each other that they are subject to each other's re-circulated or preheated air. • Occasionally clean the air vents on the front, back, and any other vented side of the computer. Lint, dust and other foreign matter can block the vents and limit the airflow. • If the computer is to be operated within a separate enclosure, intake and exhaust ventilation must be provided on the enclosure, and the same operating guidelines listed above will still apply.		
Temperature Range	Operating: 50° to 95° F (10° to 35° C)* Non-operating: -22° to 140° F(-30° to 60° C)	
Relative Humidity	Operating: 10% to 90% (non-condensing at ambient) Non-operating: 5% to 95% (non-condensing at ambient)	
Maximum Altitude (unpressurized)	Operating: 10,000 ft (3048 m) Non-operating: 30,000 ft (9144 m)	
* Operating temperature is de-rated 1.0 deg C per 300 m (1000 ft) to 3000 m (10,000 ft) above sea level, no direct sustained sunlight. Maximum rate of change is 10 deg C/Hr. The upper limit may be limited by the type and number of options installed.		

	Microtower		Small Form Factor	
Power Supply	300-watt BTX power supply – Passive PFC 115v/230v line switch	300-watt 80 PLUS* BTX power supply – Active PFC	240-watt BTX power supply – Active PFC 115v/230v line switch	240-watt 80 PLUS* BTX power supply – Active PFC
Operating Voltage Range	90 to 132VAC, or 180 to 264VAC	90 to 264VAC	90 to 132VAC, or 180 to 264VAC	90 to 264VAC
Rated Voltage Range	100 to 127VAC, or 200 to 240VAC	100 to 240VAC	100 to 127VAC, or 200 to 240VAC	100 to 240VAC
Rated Line Frequency	50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz
Operating Line Frequency Range	47–63 Hz	47–63 Hz	47–63 Hz	47–63 Hz
Rated Input Current	8A/4A	5A/2.5A	6A/3A	3.5A/1.75
Heat Dissipation	Typical 315 btu/hr (79 kg-cal/hr) Maximum 1575 btu/hr (397 kg-cal/hr)	Typical 270 btu/hr (68 kg-cal/hr) Maximum 1280 btu/hr (322 kg-cal/hr)	Typical 315 btu/hr (79 kg-cal/hr) Maximum 1260 btu/hr (317 kg-cal/hr)	Typical 270 btu/hr (68 kg-cal/hr) Maximum 1025 btu/hr (258 kg-cal/hr)
Power Supply Fan	Variable speed fan	Variable speed fan	Variable speed fan	Variable speed fan
ENERGY STAR 4.0 Compliant		X		X
FEMP Standby Power Compliant (<2W in S5 – Power Off)**	X	X	X	X
Power Consumption in ES Mode – Suspend to RAM (S3) (Instantly Available PC)	<4W	<3W	<4W	<3W

* This 80% efficient power supply is a requirement for ENERGY STAR 4.0 compliance in conjunction with a select range of processors and modules.
** Power consumption in the Off/Apparent Off mode is measured and reported with the network interface controller "Wake on LAN" feature disabled in F10 Setup (default is "enabled").

ROM BIOS Information
Key features of the HP BIOS in the dc5800 include: • Deployment and manageability – HP BIOS provides several technologies that help integrate the HP Business desktop computer into the enterprise, such as PXE, remote configuration, remote control, and F10 Setup support for 12 languages. • Stability – HP BIOS supports the HP stable product roadmap by releasing only critical BIOS changes to the factory and advanced change notification. • Security – HP BIOS offers a robust and flexible set of security features to help the system administrator secure their systems from removal of sensitive data, and help prevent access by unauthorized users. • Tracking and tracing capabilities in case of theft available in select countries (subscription sold separately). • Thermal and power management – The HP BIOS provides and enables thermal and power management technologies to assist in operating the HP Business Desktop computer in any enterprise environment. • Serviceability – HP BIOS provides diagnostic and detailed service information. • Upgrades and recovery – HP BIOS provides numerous ways to upgrade HP Business Desktop computers, including BIOS updates from within DOS (Flashlite), BIOS updates from within Windows (HPQFlash, SSM), HP Client Manager, and fail-safe recovery. In addition, the HP Business Desktop BIOS Utilities tool enables replicated BIOS setup throughout the Enterprise; it is available from within the BIOS software and from the support website. Additional HP BIOS Features • Administrator password – Also known as the setup password, this helps prevent unauthorized changes to the system configuration. If the administrator password is not known, the BIOS version cannot be changed and changes cannot be made to BIOS settings using F10 setup or under the OS. • Advanced Configuration and Power Interface (ACPI) – Represents a significant innovation in power and configuration management, allowing operating systems and applications to manage power based on activity and usage. Provides power conservation features under Windows XP. • Ability to mute the internal speaker

Other Features	Description
ACPI-Ready Hardware	Advanced Configuration and Power Management Interface (ACPI). • Allows the system to wake from a low power mode. • Controls system power consumption, making it possible to place individual cards and peripherals in a low-power or powered-off state without affecting other elements of the system.
SMBIOS Ver. 2.4	System Management BIOS, previously known as DMI BIOS, for system management information
Wired for Management Support	Intel-driven, industry-wide initiative to make Intel architecture-based PCs, servers and mobile computers more inherently manageable right out of the box and over the network
Dual-State Power Button	Power button acts as both an on/off button and suspend-to-sleep button

Technical Specifications

Serviceability Features of System		
Dual Color Power LED on Front of Computer (Indicates Normal Operations and Fault Conditions)		
Diagnostic LED Explanation Table	Number of 1-second red LED blinks followed by 2-second pause, then repeats: 2-processor thermal protection activated 3-processor not installed 4-power supply failure 5-memory error 6-video error 7-PCA failure (ROM detected failure prior to video) 8-invalid ROM, bootblock recover mode	
• System/Emergency ROM	• Flash ROM	• CMOS Battery Holder for easy Replacement
• Flash Recovery with Video	• 5 Aux Power LED on System PCA	• Processor ZIF Socket for easy Upgrade
• Over-Temp Warning on Screen (Requires IM Agents)	• Clear Password Jumper	• DIMM Connectors for easy Upgrade
• Restore CD	• Clear CMOS Switch	• NIC LEDs (integrated) (Green & Amber)

Serviceability Features of Chassis		
• Dual Color Power and HD LED – To Indicate Normal Operations and Fault Conditions	• Color coordinated cables and connectors	• Tool-less Hood Removal (thumbscrews for Microtower, spring-latch for Small Form Factor)
• Front power switch	• System memory can be upgraded upgraded on Microtower without removing any internal components	• Tool-less Hard Drive, CD & Diskette Removal
Feature	Description	
Towerable	Product can be oriented as a tower (in addition to desktop orientation)	
Drive Self Tests (DPS)	• Drive Protection System • A diagnostic hard drive self test. It scans critical physical components and every sector of the hard drive for physical faults and then reports any faults to the user. • Running independently of the operating system, it can be accessed through a Windows-based diagnostics utility or through the computer's setup procedure. It produces an evaluation on whether the hard drive is the source of the problem and needs to be replaced. • The system expands on the Self-Monitoring, Analysis, and Reporting Technology (SMART), a continuously running systems diagnostic that alerts the user to certain types of failures.	
DPS Access through F10 Setup during Boot		
SMART IV Technology* (Self-Monitoring, Analysis and Reporting Technology)	Allows hard drives to monitor their own health and to raise flags if imminent failures were predicted • Predicts failures before they occur. Tracks fault prediction and failure indication parameters such as re-allocated sector count, spin retry count, calibration retry count • By avoiding actual hard drive failures, SMART hard drives act as “insurance” against unplanned user downtime and potential data loss from hard drive failure	

Technical Specifications - Audio

High Definition Audio	Type	Integrated
	High Definition Stereo Codec	Yes – 4-channel ADI 1884 codec
	Audio Jacks	Front microphone-In (150-K ohm Input Impedance) Rear Line-In/Microphone input (150-K ohm Input Impedance, function is configurable by audio driver) Rear Line-Out* (190 ohms Output Impedance, expects at least a 10-K ohm load) Front Headphone-Out (0.5 Ohm Output Impedance, expects at least a 32 ohm load)
	* Internal Speaker Amplifier is for Internal Speaker only. External Speakers need to be powered externally. Rear Line in audio port is re-taskable as Line-in or Microphone-in.	
	Multistreaming Capable	Multistreaming can be enabled in the ADI control panel to allow independent audio streams to be sent to/from the front and rear jacks.
	Sampling	8 kHz – 192 kHz
	Wavetable Syntheses (software)	Yes – Uses OS soft wavetable
	Analog Audio	Yes
	Number of Channels on Line-Out (mono/stereo)	Stereo (Left & Right channels)
	Internal Audio Speaker Power Rating	1.5 W
	Internal Speaker	Yes; ability to mute internal speaker through F10 Setup
	External Speaker Jack (Line-Out)	Yes

Integrated Intel 82566DM Gigabit Network Connection	Connector	RJ-45
	Controller	Intel Nineveh Gigabit platform LAN Connect Networking Controller
	Memory	Integrated 96KbB on chip buffer memory
	Data rates supported	10/100/1000 Mbps
	Compliance	IEEE 802.1P, 802.1Q, 802.2, 802.3, 802.3 ab and 802.3u compliant,
	Bus architecture	GLCI, LCI interface. Intel specific MAC to PHY interface
	Data transfer mode	At gigabit GLCI (802.3 serdes) is for Data, LCI (parallel bus)for MDIO, at 10/100 LCI for both data and MDIO, GLCI is idle.
	Hardware certifications	FCC, B, CE, TUV- cTUVus Mark Canada and United States, TUV- GS Mark for European Union
	Power requirement	Require 3.3Vaux,1.8V and 1.0V or just 3.3V with integrated regulators Power consumption 1.16 Watts for 82566, whole LOM 2.53 Watts
	ACBS	Intel Auto Connect Battery Saving feature
	Boot ROM support	Yes
	Network transfer mode	Full-duplex
		Half-duplex (not available for the 1000BASE-T transceiver)
	Network transfer rate	10BASE-T (half-duplex) 10 Mbps
		10BASE-T (full-duplex) 20 Mbps
		100BASE-TX (half-duplex) 100 Mbps
		100BASE-TX (full-duplex) 200 Mbps
		1000BASE-T (full-duplex) 2000 Mbps
	Environmental	Operating temperature: 32° to 131°F (0° to 55° C) To 70° C for external regulator
		Operating humidity: 85% at 131° F (55° C)
	Management capabilities	WOL, auto MDI crossover, PXE, Muti-port teaming, RSS, Advanced cable diagnostic.

Intel PRO/1000 PT PCIe Gigabit NIC	Connector	RJ-45
	Controller	Intel 82572EI Gigabit Ethernet Controller
	Memory	Integrated Dual 48K configurable transmit receive FIFO Buffers
	Data rates supported	10/100/1000 Mbps
	Compliance	IEEE 802.1P, 802,1Q, 802.2, 802.3, 802.3AB and 802.3u compliant, 802.3x flow control
	Bus architecture	PCI-E 1.0a
	Data transfer mode	Bus-master DMA
	Hardware certifications	FCC, B, CE, TUV- cTUVus Mark Canada and United States, TUV- GS Mark for European Union
	Power requirement	Aux 3.3V, 3.0 Watts in 1000base-T and 2.0 Watts in 100Base-T
	Boot ROM support	Yes

	Network transfer rate	10BASE-T (half-duplex) 10 Mbps	
		10BASE-T (full-duplex) 20 Mbps	
		100BASE-TX (half-duplex) 100 Mbps	
		100BASE-TX (full-duplex) 200 Mbps	
		1000BASE-T (full-duplex) 2000 Mbps (actual rate limited by PCI Bus)	
	Environmental	Operating temperature	32° to 131°F (0° to 55° C)
		Operating humidity	85% at 131° F (55° C)
	Dimensions	6.4 x 2.6 x 0.8 in (16.3 x 6.6 x 1.9 cm)	
	Management capabilities	WOL, PXE, DMI, WFM 2.0.	
Broadcom NetXtreme Gigabit Ethernet PCIe NIC Card	Connector	RJ-45	
	Controller	Broadcom 5751 PCI-Express LAN Controller	
	Memory	Integrated 96Kb frame buffer memory	
	Data rates supported	10/100/1000 Mbps	
	Compliance	IEEE 802.1P, 802.1Q, 802.2, 802.3, 802.3AB and 802.3u compliant, 802.3x flow control	
	Bus architecture	PCI-E	
	Data path width	Single channel, PCI-E	
	Data transfer mode	Bus-master DMA	
	Hardware certifications	FCC, B, CE, TUV- cTUVus Mark Canada and United States, TUV- GS Mark for European Union	
	Power requirement	3.1 watts @ +3.3V AUX supply with 5V tolerance	
	Boot ROM support	Yes	
	Network transfer mode	Full-duplex	
		Half-duplex (not available for the 1000BASE-T transceiver)	
	Network transfer rate	10BASE-T (half-duplex) 10 Mbps	
		10BASE-T (full-duplex) 20 Mbps	
		100BASE-TX (half-duplex) 100 Mbps	
		100BASE-TX (full-duplex) 200 Mbps	
		1000BASE-T (full-duplex) 2000 Mbps (actual rate limited by PCI Bus)	
	Environmental	Operating temperature	32° to 131°F (0° to 55° C)
		Operating humidity	85% at 131° F (55° C)
	Dimensions	4.4 x 2.2 x 0.08 in (11.2 x 5.5 x 2 cm)	
	Management capabilities	ACPI, WOL and DMI 2.0, PXE 2.1, WfM 2.0, Broadcom mgmt utility	

Technical Specifications - Communications

HP Wireless A+G PCI	Dimensions	4.99 x 2.54 x 0.71 in (126.8 x 64.4 x 18.0 mm)	
	Weight	0.268 lb (65 g)	
	Controller system interface	Atheros AR5414X chipset PCI Spec 2.2	
	Network standard	IEEE 802.11a/b/g	
	Frequency band	5.1500 to 5.8500 GHz	
		2.4000 to 2.4835 GHz	
		2.4465 to 2.4835 GHz (Europe, Middle East, Asia and Asia Pacific – excluding Japan)	
		2.4000 to 2.4697 GHz (Japan)	
	Operating temperature	32° to 140° F (0° to 60° C), operating	
	Storage temperature	-4° to 176° F (-20° to 80° C), non-operating	
	Humidity	10% to 85% non-condensing	
	Operating voltage	5V ± 5%	
	Power consumption	Tx/Rx peak 560/250mA @ 3.3V (max.)	
	Output power (approximately)	15 dBM ±2dB	
	Receive sensitivity	-90dBm at 11 Mbps (typical)	
	Data transfer rate	Standard rates of 1, 2, 5.5, 11, 6, 9, 12, 18, 24, 48, 54 and Super AG Mode108-Mbps	
	Spreading	DSSS (Direct Sequence Spread Spectrum)	
	Security	64(40h) bit, 128(104h) bit, WPA, IEEE802.1X, AES-OCB, AES-CCM, Microsoft PEAP,TKIP, WEP.	
	Antenna	External 5dBi antenna	
	Throughput	108 Mbps (only with Belkin 54G or above router that supports 108 Mbps speed)	200 ft (60.96 m) – Indoor
		54 Mbps	200 ft (60.96 m) – Indoor
		11 Mbps	200 ft (60.96 m) – Indoor
	Certifications	Wi-Fi certified	
	Certifications for use by country	North America: United States, Canada	
		Europe: Austria, Belgium, Cyprus, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Liechtenstein, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom Australia	
		New Zealand	

Technical Specifications - Communications

2006 Agere PCI 56K International SoftModem	Data Transmission	Technology speeds: 56,000 Kbps maximum downstream data, controllerless NOTE: 56 Kbps technology refers to download speeds only and requires compatible modems at server sites. Other conditions may limit modem speed. FCC limitations allow a maximum of 53 Kbps during download transmissions.
	Data Speeds	(Upload only) 33,600/31,200/28,800/26,400/21,600/19,200/16,800/14,400/12,000/9,600/7,200/4,800/2,400/1,200/300
	Data Standards	ITU-T V.90, ITU-T, ITU-T V.34, V.44, V.42, V.42bis21, V.32bis, Bell 212A, and Bell 103
	Fax Speeds	14,400/12,000/9,600/7,200/4,800/2,400/1,200/300 b/s
	Fax Mode Capabilities	ITU-T T.31 class 1 FAX, V. 17, V.29, V.27ter, and V.21 Channel 2
	Error Correction and Data Compression	V.44, 42bis, V.42 and MNP2-5
	Power Management	ACPI; PPMI 1.1 and wake support with PME and Vaux; meets PCI 2.3 requirements and PC 2001 requirements
	Upgradeability	Driver upgradeable for future enhancements
	Video	ITU-T V.80 video ready interface
	Other	TIA/EIA 602 standard AT command set Integrated DTE interface with speeds of up to 115.2 Kbps, parallel 16550a UART-compatible interface Optional ring wakeup signal
	Operating Temperature	32° to 158° F (0° to 70° C)
	Operating Humidity	20% to 90%, non-condensing
	Power	Requires a 3.3-V auxiliary power rail on PCI bus Uses only one PCI load (i.e., one grant/request pair), one shared IRQ, one electrical load
	Chipset	Agere Systems SV92PL – Integrated PCI interface with 5-V tolerant buffers and CardBus support
	Dimensions (L X H)	Complies with PCI low profile specifications-6.7 x 2.3 in (17.0 x 5.8 cm) and supports high- and low-profile brackets
	Connection	Single RJ-11 connector
	Other Features	Digital line protection, call progress monitoring via on-board piezo device, support for high profile and low profile brackets, PnP ID support
	Safety	UL recognized to UL 1950, 3rd edition (U.S. and Canada); IEC 950 (TUV, NEMKO, DEMKO, SEMKO); CE Mark, EC 950 (TUV, NEMKO, DEMKO, SEMKO, CE mark
	EMC	FCC Part 15, IC ES003, EN 55022, 3rd edition, EN 55024, annex A, EN 61000-4-6, EN 61000-4-8
	Telecom	FCC Part 68, IC-CS-03 (Canada); Worldwide PTT approvals Not available in Korea or the Republic of South Africa.
	Health	Bare PCB material compliant to 94V-0 or better (marked as such)
	Other	PC 2001 compliant, PCI version 2.3, WHQL approved; ACPI compliant

Technical Specifications - Graphics

Integrated Graphics Media Accelerator 3100	3D/2D Controller	Microsoft DirectX® 9 based with support for Pixel Shader 2.0, 4:1 anisotropic filtering, Gaussian texture filtering, shadow maps, volumetric textures, double-sided stencil buffers, and 4 pixel pipes.
	VGA Controller	Integrated
	Bus Type	PCI Express™ x16 (If an external graphics card is installed in a PCI or PCIe x1 slot, the internal graphics can be enabled or disabled using the system's BIOS setup utility. If a graphics card other than an SDVO/ADD2 card is installed in the PCI Express™ x16 slot, the internal graphics cannot be enabled).
	RAMDAC	Integrated, 350 MHz (2048x1536@75 Hz)
	Memory	Graphics memory is shared with system memory. Graphics memory usage varies depending on the amount of system memory installed and system load. 8 MB is pre-allocated for graphics use at system boot time. Additional memory is allocated for graphics as needed using Intel's Dynamic Video Memory Technology (DVMT), to provide an optimal balance between graphics and system memory use. System memory equal or greater than 512 MB 8 MB pre-allocated + 248 MB DVMT = max frame buffer of 256 MB
	Overlay Planes	Single overlay support with 5x3 filtering
	Maximum Colour Depth	32 bits/pixel
	Maximum Vertical Refresh Rate	85 Hz at up to 1920x1440, 75 Hz at 2048x1536. Varies with mode and configuration. See table below.
	Multi-display Support	Support for one CRT via the motherboard's VGA connector on SFF and MT. Support for an additional display on SFF/MT can be accomplished with the addition of SDVO/ADD2 option installed in PCIe x16 slot.
	Graphics/Video API Support	Microsoft DirectX®9, DirectXVA®, VMR9, GDI/GDI+; OpenGL® 1.4.

Resolutions Supported[1]

Resolution	Maximum Refresh Rate (Hz)	
	Analog Monitor	Digital Monitor
640 x 480	85	60
800 x 600	85	60
1024 x 768	85	60
1280 x 1024	85	60
1600 x 1200	85	60
1920 x 1080	85	60
1920 x 1200	85	60
1920 x 1440	85	N/A
2048 x 1536	75	N/A

1 Modes listed are supported with a single active display. The supported mode list for multiple active displays is a subset of this list. Not all modes will support video playback and some supported modes may use software MC (motion compensation) rather than hardware MC. Not all modes will support 3D acceleration depending on the system configuration (e.g., resolution selected, size of frame buffer, number of installed memory modules, etc.).

NOTE: Other resolutions and refresh rates may be selectable but are not recommended.

Technical Specifications - Graphics

DVI ADD2 Graphics[1]	Models	HP ADD2 SDVO DVI-D Out Adapter
	Form Factor	Low-profile card
	DVI-D Connector	Digital connection only
	Dual Head Support	Yes, when used with the integrated VGA connector
	Display Devices Supported	HP L1740 HP L1940T HP L2045W HP LP1965
	NOTE: These graphics adapters offer optimal performance with any display that meets applicable VESA standards.	
	Colour Depth	All modes support 8-bpp, 16-bpp, and 24-bpp colour depths
	Host Interface Connector	Mechanically compliant with PCI-E standard Complies with the Intel ADD2 and Intel Serial Digital Video Output (SDVO) specifications
	Dot Clock	165 MHz maximum
	Display Modes	Supports display modes that require up to 165-MHz bandwidth on the link, as shown in the following table.

Resolution		60-Hz LCD	60-Hz	75-Hz	85-Hz
Blanking		5% reduced	GTF	GTF	GTF
640 x 480	VGA	Yes	Yes	Yes	Yes
800 x 600	SVGA	Yes	Yes	Yes	Yes
1024 x 768	XGA	Yes	Yes	Yes	Yes
1280 x 1024	SXGA	Yes	Yes	No	No
1600 x 1200	UXGA	Yes	Yes	No	No

NVIDIA Quadro NVS 290 256MB PCIe Dual Head	Form Factor	Low Profile
	Bus Type	PCIe x16
	Memory	256 MB 400MHz DDR2 SDRAM unified frame buffer, Z-buffer and Texture storage
	Connector	DMS-59, includes DMS-59 to Dual VGA cable
	Display Resolution Support	Dual integrated analog display controllers supporting up to two analog displays at 2048x1536 @ 85Hz on both displays or dual digital displays at 1920x1200 (single-link). NVIEW advanced multi-display desktop and application management seamlessly integrated into Microsoft Windows
	RAMDAC	Integrated dual 400MHz
	Colour planes	32-bit colour buffer
	Overlay planes	Hardware supported
	nView architecture	Advanced multi-display desktop & application management seamlessly integrated into Microsoft Windows.
	Multi-Monitor support	Dual monitor support
	DVI support	DMS-59 (to dual DVI-SL)

Technical Specifications - Graphics

	High-definition Video Processor (HDVP)	Full-screen, full-frame video playback of HDTV and DVD content DVD-ready motion compensation for MPEG- 2Independent hardware colour controls for video overlay Hardware colour-space conversion (YUV 4:2:2 and 4:2:0) IDCT motion compensation 5-tap horizontal by 3-tap vertical filtering 8:1 up/down scaling
	Supported graphics APIs	OGL 2.1 & DX10 Support; Shader Model 4.0

NVIDIA GeForce 8400 GS (256 MB SH) PCIe x16 Graphics Controller	Bus type	PCI Express (x16 lanes)
	Maximum vertical refresh rate	85 Hz
	Display support	Integrated 400 MHz RAMDAC
	Display max resolution	2048 x 1536 (analog), 2560 x 1600 (digital)
	Input/Output connectors	DVI-I (DVI port supports dual-link and HDCP) TV-out (4 pin S-video)
	Board display options	DVI-I + TV DVI-I supports analog CRT or flat panel or digital flat panel (using DVI-A, DVI-D or DVI-I connector) DVI-I supports analog CRT or flat panel (with VGA connector and DVI-I to VGA dongle) TV connector is a 4-pin mini-DIN S-video connector
	Board configuration	Specification: Description Graphics Chip: NVIDIA P413-260 Core clock: 460 MHz Memory clock: 200 MHz Frame buffer: 256 MB DDR2
	Languages supported	24 languages: English, Arabic, Chinese Simplified, Chinese Traditional, Czechoslovakian, Danish, Dutch, Finnish, French, German, Greek, Hebrew, Hungarian, Italian, Japanese, Korean, Norwegian, Polish, Portuguese, Russian, Spanish, Swedish, Thai, Turkish
	System memory	1GB of system memory required
	Core power	25 W (Max board power)

Technical Specifications - Graphics

NVIDIA GeForce 8400 GS (256 MB SH) PCIe x16 Graphics Controller display resolutions and refresh rates

NOTE: Other resolutions may be available but are not recommended as they may not have been tested and qualified by HP.

Analog Resolution	Maximum Refresh Rate
640 x 480	85 Hz
800 x 600	85 Hz
1024 x 768	85 Hz
1280 x 1024	85 Hz
1600 x 1200	85 Hz
1920 x 1080	85 Hz
1920 x 1200	85 Hz
1920 x 1440	85 Hz
2048 x 1536	85 Hz
Digital Resolution	**Maximum Refresh Rate**
640 x 480	60 Hz
800 x 600	60 Hz
1024 x 768	60 Hz
1280 x 1024	60 Hz
1600 x 1200	60 Hz
1920 x 1200*	60 Hz
1920 x 1440**	60 Hz
2560 x 1600**	60 Hz

* Reduced blanking timings used when connected to a single-link DVI monitor
** Requires a dual-link DVI capable monitor

NVIDIA GeForce 8400 GS (256 MB DH) PCIe x1 Graphics Controller	Bus type	PCIe x1
	Maximum vertical refresh rate	85 Hz
	Display support	Integrated 400 MHz RAMDAC
	Display max resolution	2048 x 1536 (analog), 2560 x 1600 (digital)
	Input/Output connectors	DMS59 (DMS-59 port supports Dual VGA or Dual DVII connections) TV-out (4 pin S-video)
	Board display options	DMS59 + TV DMS59 supports either 2 VGA displays with the included cable or 2 DVII displays with optional HP DMS59 DVI Dual-head Connector Cable kit #DL139A TV connector is a 4-pin mini-DIN S-video connector
	Board configuration	Specification: Description
		Graphics Chip: NVIDIA GeForce 8400 GS
		Core clock: 460 MHz
		Memory clock: 200 MHz
		Frame buffer: 256 MB DDR2

Languages supported	24 languages: English, Arabic, Chinese Simplified, Chinese Traditional, Czechoslovakian, Danish, Dutch, Finnish, French, German, Greek, Hebrew, Hungarian, Italian, Japanese, Korean, Norwegian, Polish, Portuguese, Russian, Spanish, Swedish, Thai, Turkish
System memory	1GB of system memory required
Core power	25 W (Max board power)

NVIDIA GeForce 8400 GS (256 MB DH) PCIe x1 Graphics Controller display resolutions and refresh rates

NOTE: Other resolutions may be available but are not recommended as they may not have been tested and qualified by HP.

Analog Resolution	Maximum Refresh Rate
640 x 480	85 Hz
800 x 600	85 Hz
1024 x 768	85 Hz
1280 x 1024	85 Hz
1600 x 1200	85 Hz
1920 x 1080	85 Hz
1920 x 1200	85 Hz
1920 x 1440	85 Hz
2048 x 1536	85 Hz
Digital Resolution	**Maximum Refresh Rate**
640 x 480	85 Hz
800 x 600	85 Hz
1024 x 768	85 Hz
1280 x 1024	85 Hz
1600 x 1200	85 Hz
1920 x 1200*	85 Hz

* Reduced blanking timings used when connected to a single-link DVI monitor

7200 RPM Serial ATA Hard Drives	500-GB	Capacity	500,107,862,016 bytes	
		Height	1 in (2.54 cm)	
		Width	Media diameter: 3.5 in (8.89 cm) Physical size: 4 in (10.2 cm)	
		Interface	Serial ATA (3.0 Gb/s)	
		Synchronous Transfer Rate (Maximum)	Up to 3 Gb/s	
		Buffer	16 MB	
		Seek Time (typical reads, includes controller overhead, including settling)	Single Track	2.0 ms
			Average	11 ms
			Full-Stroke	21 ms
		Rotational Speed	7,200 rpm	
		Logical Blocks	976,773,168	
		Operating Temperature	41° to 131° F (5° to 55° C)	
	250-GB	Capacity	250,059,350,016 bytes	
		Height	1 in (2.54 cm)	
		Width	Media diameter: 3.5 in (8.89 cm) Physical size: 4 in (10.2 cm)	
		Interface	Serial ATA (3.0 Gb/s)	
		Synchronous Transfer Rate (Maximum)	Up to 3 Gb/s	
		Buffer	8 MB	
		Seek Time (typical reads, includes controller overhead, including settling)	Single Track	2.0 ms
			Average	11 ms
			Full-Stroke	21 ms
		Rotational Speed	7,200 rpm	
		Logical Blocks	488,397,168	
		Operating Temperature	41° to 131° F (5° to 55° C)	

Technical Specifications - Hard Drives

160-GB	Capacity	160,041,885,696 bytes	
	Height	1 in (2.54 cm)	
	Width	Media diameter: 3.5 in (8.89 cm) Physical size: 4 in (10.2 cm)	
	Interface	Serial ATA (3.0 Gb/s)	
	Synchronous Transfer Rate (Maximum)	Up to 3 Gb/s	
	Buffer	8 MB	
	Seek Time (typical reads, includes controller overhead, including settling)	Single Track	2.0 ms
		Average	11 ms
		Full-Stroke	21 ms
	Rotational Speed	7,200 rpm	
	Logical Blocks	312,581,808	
	Operating Temperature	41° to 131° F (5° to 55° C)	

80-GB	Capacity	80,026,361,856 bytes	
	Height	1 in (2.54 cm)	
	Width	Media diameter: 3.5 in (8.89 cm) Physical size: 4 in (10.2 cm)	
	Interface	Serial ATA (3.0 Gb/s)	
	Synchronous Transfer Rate (Maximum)	Up to 3 Gb/s	
	Buffer	8 MB	
	Seek Time (typical reads, includes controller overhead, including settling)	Single Track	2.0 ms
		Average	11 ms
		Full-Stroke	21 ms
	Rotational Speed	7,200 rpm	
	Logical Blocks	156,301,488	
	Operating Temperature	41° to 131° F (5° to 55° C)	

PS/2 Standard Keyboard	Physical characteristics	Keys	104, 105, 106, 107, 109 layout (depending upon country)
		Dimensions (L x W x H)	18.0 x 6.4 x 0.98 in (45.8 x 16.3 x 2.5 cm)
		Weight	2 lb (0.9 kg) minimum
	Electrical	Operating voltage	+ 5VDC ± 5%
		Power consumption	50-mA maximum (with three LEDs ON)
		System interface	PS/2 6-pin mini din connector
		ESD	CE level 4, 15-kV air discharge
		EMI – RFI	Conforms to FCC rules for a Class B computing device
		Microsoft PC 99 – 2001	Functionally compliant
	Mechanical	Languages	38 available
		Keycaps	Low-profile design
		Switch actuation	55-g nominal peak force with tactile feedback
		Switch life	20 million keystrokes (using Hasco modified tester)
		Switch type	Contamination-resistant switch membrane
		Key-leveling mechanisms	For all double-wide and greater-length keys
		Cable length	6 ft (1.8 m)
		Microsoft PC 99 – 2001	Mechanically compliant
		Acoustics	43-dBA maximum sound pressure level
	Environmental	Operating temperature	50° to 122° F (10° to 50° C)
		Non-operating temperature	-22° to 140° F (-30° to 60° C)
		Operating humidity	10% to 90% (non-condensing at ambient)
		Non-operating humidity	20% to 80% (non-condensing at ambient)
		Operating shock	40 g, six surfaces
		Non-operating shock	80 g, six surfaces
		Operating vibration	2-g peak acceleration
		Non-operating vibration	4-g peak acceleration
		Drop (out of box)	26 in (66 cm) on carpet, six-drop sequence
		Drop (in box)	42 in (107 cm) on concrete, 16-drop sequence
	Approvals	UL, CSA, FCC, CE Mark, TUV, TUV GS, VCCI, BSMI, C-Tick, MIC	
	Ergonomic compliance	ANSI HFS 100, ISO 9241-4, and TUVGS	

Technical Specifications - Input/Output Devices

HP PS/2 Optical Scroll Mouse	Dimensions (H x L x W)	3.95 x 6.21 x 11.7 cm (1.56 x 2.44 x 4.61 in)	
	Weight	4.44 oz (126 g)	
	Environmental	Operating temperature	-32° to 104°F (0° to 40° C)
		Non-operating temperature	-4° to 140°F (-20° to 60° C)
		Operating humidity	10% to 90% (non condensing at ambient)
		Non-operating humidity	10% to 90% non condensing
		Operating shock	40 g, 6 surfaces
		Non-operating shock	80 g, 6 surfaces
		Operating vibration	2 g peak acceleration
		Non-operating vibration	4 g peak acceleration
		Drop (out of box)	80 cm height onto asphalt tile over concrete or equivalent, 5-drop in 5 direction except the cable face
	Electrical	Operating voltage	5 VDC ± 10%
		Power consumption	100mA
		System consumption	PS/2 mini-din connector
		ESD	CE level 4, 15 kV air discharge
		EMI-RFI	Conforms to FCC rules for a Class B computing device
		Microsoft PC99 – 2001	Functionally compliant
	Mechanical	Resolution	400 ± 20% DPI
		Tracking speed	10 in/s (25.4 cm/s) maximum
		Acceleration	100 in/s/s (2.54 m/s/s)
		Switch actuation	61 g nominal peak force
		Switch life	3,000,000 operations (using Hasco modified tester)
		Switch type	Low force micro-switches
		Tracking mechanism life	155 mi (250 km) at average speed of 10 in/s
		Cable length	6 ft (1.8 m)
		Microsoft PC99 – 2001	Mechanically compliant
	Scroll wheel	Width	8 mm
		Diameter	1.01 in (25.6 mm)
		Maximum rotation speed	48 rats/sec
		Switch type	Light force micro-switch
		Switch life	1 million operations
		Mechanical life	Minimum 200,000 revolutions
	Regulatory approvals	Compliant	UL, CSA, FCC, CE Mark, TUV, TUV GS, VCCI, BSMI, C-Tick, MIC

Technical Specifications - Input/Output Devices

HP USB Optical Scroll Mouse	Dimensions (H x L x W)	1.5 x 4.5 x 2.5 in (3.8 x 11.6 x 6.3 cm)
	Weight	0.27 lb (0.12 kg)
	Cable length	72.8 in (185 cm)

Technical Specifications - Optical Storage

HP SATA SuperMulti LightScribe DVD Writer Drive	Height	5.25-inch, half-height, tray-load	
	Orientation	Either horizontal or vertical	
	Interface type	SATA/ATAPI	
	Disc capacity	8.5 GB DL or 4.7 GB standard	
	Dimensions (W x H x D)	5.9 x 1.7 x 8.0 in (15.0 x 4.4 x 20.3 cm)	
	Weight (max)	2.6 lb (1.2 kg)	
	Write speeds	DVD-RAM	Up to 12X
		DVD+R	Up to 16X
		DVD+RW	Up to 8X
		DVD+R DL	Up to 8X
		DVD-R DL	Up to 8X
		DVD-R	Up to 16X
		DVD-RW	Up to 6X
		CD-R	Up to 48X
		CD-RW	Up to 32X
	Read speeds	DVD-RAM	Up to 12X
		DVD+RW, DVD-RW, DVD+R DL, DVD-R DL	Up to 8X
		DVD-ROM DL	Up to 8X
		DVD-ROM, DVD+R, DVD-R	Up to 16X
		CD-ROM, CD-R	Up to 48X
		CD-RW	Up to 32X
	Access time (typical reads, including settling)	Random	DVD: < 140 ms (typical), CD: < 125 ms (typical)
		Full Stroke	DVD: < 250 ms (seek), CD: < 210 ms (seek)
	Power	Source	SATA DC power receptacle
		DC Power Requirement	5 VDC ± 5%-100 mV ripple p-p
			12 VDC ± 5%-200 mV ripple p-p
		DC Current	5 VDC (< 1000 mA typical, 1600 mA maximum)
			12 VDC (< 600 mA typical, 1400 mA maximum)
	Environmental conditions (operating – non-condensing)	Temperature	41° to 122° F (5° to 50° C)
		Relative Humidity	10% to 90%
		Maximum Wet Bulb Temperature	86° F (30° C)

Technical Specifications - Optical Storage

SATA CD-RW/DVD-ROM Combo Drive	Height	5.25-inch, half-height, tray-load	
	Orientation	Either horizontal or vertical	
	Interface type	SATA/ATAPI	
	Disc capacity	Single layer: Up to 4.7 GB (6 times capacity of CD-ROM) Double layer: Up to 8.5 GB (12 times capacity of CD-ROM)	
	Dimensions (W x H x D)	5.9 x 1.7 x 8.0 in (15.0 x 4.4 x 20.3 cm)	
	Weight (max)	2.6 lb (1.2 kg)	
	Write speeds	CD-R	Up to 48X
		CD-RW	Up to 32X
	Read speeds	DVD+R/-R/+RW/ -RW/+R DL /-R DL	Up to 8X
		DVD-ROM	Up to 16X
		CD-ROM, CD-R	Up to 48X
		CD-RW	Up to 32X
	Access time (typical reads, including settling)	Random	DVD: < 140 ms (typical), CD: < 125 ms (typical)
		Full Stroke	DVD: < 250 ms (typical), CD: < 210 ms (typical)
	Power	Source	SATA DC power receptacle
		DC Power Requirement	5 VDC ± 5%-100 mV ripple p-p
			12 VDC ± 5%-200 mV ripple p-p
		DC Current	5 VDC (< 1000 mA typical, < 1600 mA maximum)
			12 VDC (< 600 mA typical, < 1400 mA maximum)
	Environmental (all conditions non-condensing)	Temperature	41° to 122° F (5° to 50° C)
		Relative Humidity	10% to 90%
		Maximum Wet Bulb Temperature	86° F (30° C)

SATA DVD-ROM Drive	Height	5.25-inch, half-height, tray-load	
	Orientation	Either horizontal or vertical	
	Interface type	SATA/ATAPI	
	Disc capacity	Single layer: Up to 4.7 GB (6 times capacity of CD-ROM) Double layer: Up to 8.5 GB (12 times capacity of CD-ROM)	
	Dimensions (W x H x D)	5.9 x 1.7 x 8.0 in (15.0 x 4.4 x 20.3 cm)	
	Weight (max)	2.6 lb (1.2 kg)	
	Read speeds	DVD+R/-R/+RW/ -RW/+R DL /-R DL	Up to 8X
		DVD-ROM	Up to 16X
		DVD-RAM	Up to 4X
		CD-ROM, CD-R	Up to 48X
		CD-RW	Up to 32X

Technical Specifications - Optical Storage

Removable Storage – Media Compatibility – DVD-ROM	Media	Read	Write
	CD-ROM	Yes	No
	CD-R	Yes	No
	CD-RW	Yes	No
	DVD-ROM	Yes	No
	DVD-ROM DL	Yes	No
	DVD-RAM	Yes	No
	DVD+R	Yes	No
	DVD+R DL	Yes	No
	DVD+RW	Yes	No
	DVD-R	Yes	No
	DVD-RW	Yes	No
	DVD-R DL	Yes	No
Access times (typical reads, including setting)	Random	DVD: < 140 ms (typical), CD: < 125 ms (typical)	
	Full Stroke	DVD: < 250 ms (seek), CD: < 210 ms (seek)	
	Cache Buffer	2 MB (minimum)	
	Data Transfer Modes	ATA PIO mode 4 (16.7 MB/s); ATA Multi-word DMA mode 2 (16.7 MB/s); ATA UltraDMA Mode 3 (44.4 MB/s -default)	
Power	Source	SATA DC power receptacle	
	DC Power Requirement	5 VDC ± 5%-100 mV ripple p-p 12 VDC ± 5%-200 mV ripple p-p	
	DC Current	5 VDC – <1000 mA typical, < 1600 mA maximum 12 VDC –< 600 mA typical, < 1400 mA maximum	
Environmental (all conditions non-condensing)	Temperature	41° to 122° F (5° to 50° C)	
	Relative Humidity	10% to 90%	
	Maximum Wet Bulb Temperature	86° F (30° C)	

HP 16-in-1 Media Card Reader	USB Interface	USB 2.0 High-speed device	
	Advance protocol support	Supports hardware ECC (Error Correction Code) function • Supports hardware CRC (Cyclic Redundancy Check) function • Supports MS 4-bit parallel transfer mode • Supports MS-PRO 4-bit parallel transfer mode • Supports SD 4-bit parallel transfer mode • Supports high-speed 50-MHz SD 4-bit card (version 1.1) • Support high-speed 52-MHz MMC 8-bit card	
	Supported media type with card adapter	• MicroSD (T-Flash) • Memory Stick Micro	
	Mechanical		
	Environmental	Operational Environmental Extremes	Test Parameters/Conditions – Power applied, unit operating on system ±5% nominal supply voltage. 10°C 10% R.H. = 24 hours 10°C 90% R.H. = 24 hours 20°C 90% R.H. = 24 hours 30°C 90% R.H. = 24 hours 40°C 90% R.H. = 24 hours 50°C 90% R.H. = 24 hours 50°C 10% R.H. = 24 hours
		Storage Environmental Extremes	Test Parameters/Conditions 60°C @ 80% R.H. for 96 hours -30°C @ 20% R.H. for 48 hours No power applied Delta °C < 1.0°C/min Delta % R.H. < 1.5% R.H./min
	Approvals	USB-IF, WHQL, Compliant with USB Mass Storage Class Bulk only Transport Specification Rev. 1.0, Compliant Intel Front Panel I/O Connectivity Design Guide V. 1.2 FCC, CE, BSMI, C-Tick, VCCI, MIC, cUL, TUV-T	

Eco-Label Certifications and declarations

This product has received or is in the process of being certified to the following approvals and may be labeled with one or more of these marks:

- US ENERGY STAR®
- US Federal Energy Management Program (FEMP)
- Taiwan Green Mark
- China Energy Conservation Program
- IT ECO declaration
- EPEAT™ Rated – GOLD
- Korea Eco-label
- Japan PC Green label*

* This product conforms to the examination standards (2003 version) under JEITA's 'PC Green Label System.'

Small Form Factor

System Configuration

The configuration used for the Energy Consumption and Declared Noise Emissions data for the Small Form Factor Desktop model is based on a typically configured product.

Energy Consumption	AC Input Voltage at 115 VAC +/- 5 VAC, 60 Hz +/- 3 Hz	AC Input Voltage at 230 VAC +/- 5 VAC, 50 Hz +/- 3 Hz	AC Input Voltage at 100 VAC +/- 5 VAC, 50 Hz +/- 3 Hz
Normal Operation On-Idle (ENERGY STAR Idle (S0))	56.48 W	55.47 W	57.01 W
ENERGY STAR "Sleep" (S3) (Wake On LAN (WOL) Enabled)	3.28 W	3.56 W	3.27 W
ENERGY STAR "Sleep" (S3) (Wake On LAN (WOL) Disabled)	3.28 W	3.56 W	3.27 W
ENERGY STAR "Standby" (Off) (S5) (Wake On LAN (WOL) Enabled)	1.6 W	1.87 W	1.58 W
ENERGY STAR "Standby" (Off) (S5) (Wake On LAN (WOL) Disabled)	0.9 W	1.16 W	0.88 W

Heat Dissipation*	AC Input Voltage at 115 VAC +/- 5 VAC, 60 Hz +/- 3 Hz	AC Input Voltage at 230 VAC +/- 5 VAC, 50 Hz +/- 3 Hz	AC Input Voltage at 100 VAC +/- 5 VAC, 50 Hz +/- 3 Hz
Normal Operation On-Idle (ENERGY STAR Idle (S0))	192.709 BTU/hr	189.263 BTU/hr	194.518 BTU/hr
ENERGY STAR "Sleep" (S3) (Wake On LAN (WOL) Enabled)	11.191 BTU/hr	12.146 BTU/hr	11.147 BTU/hr
ENERGY STAR "Sleep" (S3) (Wake On LAN (WOL) Disabled)	11.191 BTU/hr	12.146 BTU/hr	11.147 BTU/hr
ENERGY STAR "Standby" (Off) (S5) (Wake On LAN (WOL) Enabled)	5.459 BTU/hr	6.38 BTU/hr	5.39 BTU/hr

ENERGY STAR "Standby" (Off) (S5) (Wake On LAN (WOL) Disabled)	3.07 BTU/hr	3.957 BTU/hr	3.002 BTU/hr

* Heat dissipation is calculated based on the measured watts, assuming the service level is attained for one hour.

This product is in compliance with US executive order 13221, WOL (wake on LAN) disabled.

Declared Noise Emissions
(in accordance with ISO 7779 and ISO 9296)

	Sound Power (LWAd, bels)	Sound Pressure (LpAm, decibels)
System Fan Off		
Idle	3.8	27
Fixed Disk (random writes)	3.9	28

Longevity and Upgrading

This product can be upgraded, possibly extending its useful life by several years. Upgradeable features and/or components contained in the product may include:

- Intel LGA775 processor socket
- 8 USB ports
- 1 empty PCI slot
- 2 empty PCIe x1 slots
- 1 empty PCIe x16 slot
- 1 internal drive slot
- 1 SATA optical drive slot
- 4 memory slots
- 1 Serial Port (optional)
- 1 external diskette drive (optional)

Spare parts are available throughout the warranty period and or for up to 5 years after the end of production

Batteries

This product complies with ISO standards:

- EU Directive 91/ 157/ EEC
- EU Directive 93/ 86/ EEC
- EU Directive 98/ 101/ EEC

Batteries used in the product do not contain:

- Mercury greater the 5ppm by weight
- Cadmium greater than 10ppm by weight
- Lead greater than 2000ppm by weight.

Battery size: CR2032 (coin cell)
Battery type: Lithium

Additional Information

- This product is in compliance with the Restrictions of Hazardous Substances (RoHS) directive - 2002/95/EC.
- This product is in compliance with California Proposition 65 (State of California; Safe Drinking Water and Toxic Enforcement Act of 1986).
- This HP product is designed to comply with the Waste Electrical and Electronic Equipment (WEEE) Directive - 2002/96/EC.
- This product is in compliance with the IEEE 1680 (EPEAT) standard at the GOLD level, see:

www.epeat.net

- Plastics parts weighing over 25 grams used in the product are marked per ISO 11469 and ISO1043.
- This product contains 0% recycled materials (by wt.)
- This product is 93% recyclable when properly disposed of at end of life.

Packaging Materials	Corrugated Paper	1915 g
	EPE Foam	135 g
	LDPE Bag	25 g

- The EPE foam packaging material is made from 30 to 60% industrial recycled content.
- The corrugated paper packaging materials contain at least 80% post consumer recycled content.

Minitower

System Configuration The configuration used for the Energy Consumption and Declared Noise Emissions data for the Minitower Desktop model is based on a typically configured product.

Energy Consumption	AC Input Voltage at 115 VAC +/- 5 VAC, 60 Hz +/- 3 Hz	AC Input Voltage at 230 VAC +/- 5 VAC, 50 Hz +/- 3 Hz	AC Input Voltage at 100 VAC +/- 5 VAC, 50 Hz +/- 3 Hz
Normal Operation On-Idle (ENERGY STAR Idle (S0))	57.72 W	57.16 W	58.12 W
ENERGY STAR "Sleep" (S3) (Wake On LAN (WOL) Enabled)	3.01 W	3.32 W	2.99 W
ENERGY STAR "Sleep" (S3) (Wake On LAN (WOL) Disabled)	3.01 W	3.32 W	2.98 W
ENERGY STAR "Standby" (Off) (S5) (Wake On LAN (WOL) Enabled)	1.47 W	1.76 W	1.45 W
ENERGY STAR "Standby" (Off) (S5) (Wake On LAN (WOL) Disabled)	0.81 W	1.09 W	0.79 W

Heat Dissipation*	AC Input Voltage at 115 VAC +/- 5 VAC, 60 Hz +/- 3 Hz	AC Input Voltage at 230 VAC +/- 5 VAC, 50 Hz +/- 3 Hz	AC Input Voltage at 100 VAC +/- 5 VAC, 50 Hz +/- 3 Hz
Normal Operation On-Idle (ENERGY STAR Idle (S0))	196.94 BTU/hr	195.029 BTU/hr	198.305 BTU/hr
ENERGY STAR "Sleep" (S3) (Wake On LAN (WOL) Enabled)	10.27 BTU/hr	11.327 BTU/hr	10.201 BTU/hr
ENERGY STAR "Sleep" (S3) (Wake On LAN (WOL) Disabled)	10.27 BTU/hr	11.327 BTU/hr	10.167 BTU/hr
ENERGY STAR "Standby" (Off) (S5) (Wake On LAN (WOL) Enabled)	5.015 BTU/hr	6.005 BTU/hr	4.947 BTU/hr
ENERGY STAR "Standby" (Off) (S5) (Wake On LAN (WOL) Disabled)	2.763 BTU/hr	3.719 BTU/hr	2.695 BTU/hr

Technical Specifications - Environmental Data

* Heat dissipation is calculated based on the measured watts, assuming the service level is attained for one hour.

This product is in compliance with US executive order 13221, WOL (wake on LAN) disabled.

Declared Noise Emissions
(in accordance with
ISO 7779 and ISO 9296)

	Sound Power (LWAd, bels)	Sound Pressure (LpAm, decibels)
Idle	3.8	27
Fixed Disk (random writes)	3.9	28

Longevity and Upgrading

This product can be upgraded, possibly extending its useful life by several years. Upgradeable features and/or components contained in the product may include:

- Intel LGA775 processor socket
- 8 USB ports
- 1 empty PCI slot
- 2 empty PCIe x1 slots
- 1 empty PCIe x16 slot
- 2 internal drive slots
- 3 external SATA drive slots
- 4 memory slots
- 1 Serial Port (optional)
- 1 external diskette drive (optional)

Spare parts are available throughout the warranty period and or for up to "X" years after the end of production.

Batteries

This product complies with ISO standards:

- EU Directive 91/ 157/ EEC
- EU Directive 93/ 86/ EEC
- EU Directive 98/ 101/ EEC

Batteries used in the product **do not** contain:

- Mercury greater the 5ppm by weight
- Cadmium greater than 10ppm by weight
- Lead greater than 2000ppm by weight.

Battery size: CR2032 (coin cell)
Battery type: Lithium

Additional Information

- This product is in compliance with the Restrictions of Hazardous Substances (RoHS) directive - 2002/95/EC.
- This HP product is designed to comply with the Waste Electrical and Electronic Equipment (WEEE) Directive - 2002/96/EC.
- This product is in compliance with California Proposition 65 (State of California; Safe Drinking Water and Toxic Enforcement Act of 1986).
- This product is in compliance with the IEEE 1680 (EPEAT) standard at the GOLD level, see: www.epeat.net
- Plastics parts weighing over 25 grams used in the product are marked per ISO 11469 and ISO1043.
- This product contains 0% recycled materials (by wt.)

- This product is 93% recyclable when properly disposed of at end of life.

Packaging Materials	Corrugated Paper	1700 g
	EPE Foam	138 g
	LDPE Bag	50 g

- The EPE foam packaging material is made from 30 to 60% industrial recycled content.
- The corrugated paper packaging materials contains at least 80% post consumer recycled content.

Small Form Factor, Minitower

RoHS Compliance

Hewlett-Packard is committed to compliance with all applicable environmental laws and regulations, including the European Union Restriction of Hazardous Substances (RoHS) Directive. HP's goal is to exceed compliance obligations by meeting the requirements of the RoHS Directive on a worldwide basis. By July 1, 2006, RoHS substances were virtually eliminated (virtually = to levels below legal limits) for all HP electronic products subject to the RoHS Directive, except where it is widely recognized that there is no technically feasible alternative (as indicated by an exemption under the EU RoHS Directive).

Material Usage

This product does not contain any of the following substances in excess of regulatory limits (refer to the HP General Specification for the Environment at: http://www.hp.com/hpinfo/globalcitizenship/environment/supplychain/gen_specifications.html):

- Asbestos
- Certain Azo Colorants
- Certain Brominated Flame Retardants – may not be used as flame retardants in plastics
- Cadmium
- Chlorinated Hydrocarbons
- Chlorinated Paraffins
- Formaldehyde
- Halogenated Diphenyl Methanes
- Lead carbonates and sulfates
- Lead and Lead compounds
- Mercuric Oxide Batteries
- Nickel – finishes must not be used on the external surface designed to be frequently handled or carried by the user.
- Ozone Depleting Substances
- Polybrominated Biphenyls (PBBs)
- Polybrominated Biphenyl Ethers (PBBEs)
- Polybrominated Biphenyl Oxides (PBBOs)
- Polychlorinated Biphenyl (PCB)
- Polychlorinated Terphenyls (PCT)
- Polyvinyl Chloride (PVC) – except for wires and cables, and certain retail packaging has been voluntarily removed from most applications.
- Radioactive Substances
- Tributyl Tin (TBT), Triphenyl Tin (TPT), Tributyl Tin Oxide (TBTO)

Packaging

HP follows these guidelines to decrease the environmental impact of product packaging:

- Eliminate the use of heavy metals such as lead, chromium, mercury and cadmium in packaging materials.
- Eliminate the use of ozone-depleting substances (ODS) in packaging materials.
- Design packaging materials for ease of disassembly.
- Maximize the use of post-consumer recycled content materials in packaging materials.
- Use readily recyclable packaging materials such as paper and corrugated materials.
- Reduce size and weight of packages to improve transportation fuel efficiency.

- Plastic packaging materials are marked according to ISO 11469 and DIN 6120 standards.

End-of-life Management and Recycling	Hewlett-Packard offers end-of-life HP product return and recycling programs in many geographic areas. To recycle your product, please go to: http://www.hp.com/recycle or contact your nearest HP sales office. Products returned to HP will be recycled, recovered or disposed of in a responsible manner. The EU WEEE directive (2002/95/EC) requires manufacturers to provide treatment information for each product type for use by treatment facilities. This information (product disassembly instructions) is posted on the Hewlett Packard web site at: http://www.hp.com/go/recyclers. These instructions may be used by recyclers and other WEEE treatment facilities as well as HP OEM customers who integrate and re-sell HP equipment.
Hewlett-Packard Corporate Environmental Information	For more information about HP's commitment to the environment: Global Citizenship Report http://www.hp.com/hpinfo/globalcitizenship/gcreport/index.html Eco-label certifications http://www.hp.com/hpinfo/globalcitizenship/environment/productdesign/ecolabels.html ISO 14001 certificates: http://www.hp.com/hpinfo/globalcitizenship/environment/operations/envmanagement.html

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